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|------------------------|-------------|----------------------|------------------------|------------------|
| 10/554,028             | 06/30/2006  | Chunquan Chen        | 2793/112               | 7849             |
| 23122                  | 7590        | 02/26/2010           | EXAMINER               |                  |
| RATNERPRESTIA          |             |                      | PRYOR, ALTON NATHANIEL |                  |
| P.O. BOX 980           |             |                      | ART UNIT               |                  |
| VALLEY FORGE, PA 19482 |             |                      | PAPER NUMBER           |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/554,028

**Applicant(s)**

CHEN ET AL.

**Examiner**

ALTON N. PRYOR

**Art Unit**

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/10/10.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7, 8, 14, 15 and 17-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7, 8, 14, 15, 17-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Applicant's arguments filed 12/10/09 have been fully considered but they are not persuasive. See discussion below.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7,8,14,15,17,21,22 and 26-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (WO 00/04778; 2/3/00). Smith et al. teach a method for promoting the germination of seed and/or seedling emergence and/or the growth plants (e.g. legumes and non-legumes) comprising subjecting the plants to an effective amount of an agricultural composition comprising 10<sup>5</sup> to 10<sup>14</sup> M Lipo chitoligosaccharide (LCO) and carrier. See abstract, page 4 lines 21-28, page 7 lines 11-29, page 11 line 11- page 12 line 25, page 16 lines 1-8 and Examples 4-6. The application of a plant to LCOs would include contacting the whole plant (foliage and stem) with the LCOs. Smith at page 4 line 20 – page 5 and page 7 lines 3-18 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae (tomatoes) are treated with LCOs. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

*Response to Applicants' Argument*

The Applicants argue that WO '778 does not teach or make obvious the application of LCOs to leaves after seedling emergence. The Examiner argues that WO '778 at page 5 last paragraph and claim 22 Smith et al. disclose treating plants (seedlings) with LCO.

Applicants argue that WO '778 at page 13 lines 4-5 and at Examples 12 and 13 teaches that LCO is applied to seed. Example 4 in WO '778 discloses that LCO is applied to potting medium. Example 5 uses LCO prior the flowering and budding. The Applicants make these arguments to support that the LCO enclosed in WO '778 is not applied to seedling or foliage. However, the Examiner argues that WO '778 at page 5 in last paragraph and claim 22 disclose treating plants (seedlings) with LCO. This teaching discloses that LCO is applied to the whole plant or seedling which would include the foliage thereof.

The '778 patent presents no data or evidence on the timing or amount of flowering or fruiting in nonlegume plants. Note, instant claims and '778 teach the same active step of applying LCO onto plants. Based on this teaching it is inherent that the timing or amount of flowering or fruiting in the legume plants would be the same in both the instant and WO '778's invention.

The Applicants argue that Smith does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Applicant argues that WO '778 discloses the effect of LCO seed treatment on germination of seeds and seedling emergence and growth in leguminous plants. WO '778 does not teach foliar

treatment of any nonleguminous plant. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7 lines 3-18 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae are treated with LCOs. WO '778 does not explicitly state that LCO is applied to plant foliage. However, WO '778 does state the plants and crop are treated with LCO. From such a statement, it can be deduced that LCO is applied to the total plant including the plant's foliage. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

Claims 7,8,14,15,17,21,22 and 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (WO 01/26465; 4/19/01). Smith et al. teach a method for increasing photosynthesis and/or yield plants (e.g. legumes and non-legumes) comprising exposing the plant leaves to an effective amount of an agricultural composition comprising  $10 \times 10^{-5}$  to  $10 \times 10^{-14}$  M Lipo chito-oligosaccharide (LCO) plus carrier. See abstract, page 5 line 20 – page 7 line 24, page 10 lines 4-10, page 15 lines 9-23, page 18 line 3 – page 19 line 7, Examples 3,5,6 and table 3,6. The exposure of a plant to LCOs would include contacting the whole plant (foliage and stem) with the LCOs. Smith at page 4 line 20 – page 5 and page 7, page 6 lines 3-13, page 7 lines 10-24, and page 8 line 2 – page 9 line 13 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae are treated with LCOs. Since both instant invention and

Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

*Response to Applicants' Argument*

Applicants argue that Smith et al. '465 does not teach any effect of LCOs on budding, flowering, fruiting, or yield in nonlegume plants. Applicants point the Examiner to drawings on pages 16-17, Examples 2-6, Tables 1-6 and Figures 1-9 of D1 to support their position. The Examiner reiterates that '465 like instant invention involve that active step of applying LCO at the same concentration to plant foliage. Thus, it is inherent that both the invention in '465 and instant invention would yield the same effect on the budding, flowering, fruiting, or yield in nonlegume plants.

Applicants argues against the Examiner's use of inherency in the rejection alleging that the Examiner does not provide a basis in fact and/or technical reasoning to support to support the use of inherency in the rejection. Applicants request that the Examiner provide a basis or technical reason to support his use of inherency in the rejection. The Examiner reiterates that '465 like instant invention involve that active step of applying LCO at the same concentration to plant foliage. Thus, it is inherent that both the invention in '465 and instant invention would yield the same effect on the budding, flowering, fruiting, or yield in nonlegume plants. This is the logic or scientific reason as to why inherency is used in this rejection.

Applicants argue that the Smith reference does not suggest that an effect on photosynthesis or germination would lead to earlier or more abundant budding, flowering, or fruiting. No reference is provided to show increased photosynthesis or

early germination quickens or stimulates flowering in legumes plants. The Examiner reiterates that '465 like instant invention involve that active step of applying LCO at the same concentration to plant foliage. Thus, it is inherent that both the invention in '465 and instant invention would yield the same effect on the budding, flowering, fruiting, or yield in nonlegume plants. This is the logic or scientific reason as to why inherency is used in this rejection. Since the active step is the same in both '465 and instant invention, it is not necessary for the Examiner to provide an addition reference to show a relationship between budding, flowering or fruiting and increased photosynthesis or early germination.

The Applicants argue that Smith is to a method for increasing photosynthesis and/or plant yield and does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7, page 6 lines 3-13, page 7 lines 10-24, and page 8 line 2 – page 9 line 13 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae are treated with LCOs. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants. Although Smith's method impacts photosynthesis, the Smith method teaches the same active step as the instant claims; thus, the same active step in Smith and instant claims will yield the same result.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-20,23-25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (WO 00/04778; 2/3/00) or Smith et al. (WO 01/26465; 4/19/01) as applied to claims 7,8,14,15,17,21,22 and 26-30. See 102(b) rejection above. The references teach all that is recited in claims 18-20,23-25 and 30 except for the administration of the ng amount of LCO to the plant or the treatment of tomato plants with LCO. In the absence of unexpected results for the claim concentration range, it is well within the skill of an artisan in the field to determine the optimum concentration. One would have been motivated to do this in order to gain proper and healthy maturation of the plant. One would have been expected to treat tomato plants with LCO since the tomato plants are species in the Solonaceae plant genus.

***Response to Applicants' arguments***

Applicants argue that WO '778 at page 13 teaches seed treatment of nonlumge plants with LCO rather than foliage application of LCO as instantly claimed. The Applicants make these arguments to support that the LCO enclosed in WO '778 is not applied to seedling or foliage. However, the Examiner argues that WO '778 at page 5 in last paragraph and claim 22 disclose treating plants (seedlings) with LCO. This teaching



discloses that LCO is applied to the whole plant or seedling which would include the foliage thereof.

The Applicants argue that Smith does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Applicant argues that WO '778 discloses the effect of LCO seed treatment on germination of seeds and seedling emergence and growth in leguminous plants. WO '778 does not teach foliar treatment of any nonleguminous plant. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7 lines 3-18 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae are treated with LCOs. WO '778 does not explicitly state that LCO is applied to plant foliage. However, WO '778 does state the plants and crop are treated with LCO. From such a statement, it can be deduced that LCO is applied to the total plant including the plant's foliage. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

Claims 18-20, 23-25, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (WO 01/26465; 4/19/01). The references teach all that is recited in claims 18-20, 23-25 and 30 except for the administration of the amount of LCO to the plant (corn). In the absence of unexpected results for the claim concentration range, it is well within the skill of an artisan in the field to determine the optimum concentration of LCO to apply to the plant. Note, at page 6 line 3 - page 8 line

9, Smith et al. suggest that LCO is applied to the plant. One would have been motivated to do this in order to gain proper and healthy maturation of the plant.

*Response to Applicants' Argument*

Applicant argue that '465 teach spray containing LCO was applied to plants when plants were large enough to allow easy leaf measurement ( p. 21 lines 22-24). The Examiner concurs that '465 discloses that LCO is applied to plant leaf. The Applicants argue that Smith does not disclose or suggest an effect of LCOs on the flowering, fruiting or yield in nonleguminous plants. The Examiner argues that Smith at page 4 line 20 – page 5 and page 7, page 6 lines 3-13, page 7lines 10-24, and page 8 line 2 – page 9 line 13 teaches that plants of non-legume plant families such as Poaceae, Malvaceae, Chenopodiaceae, Brassicaceae and Solonaceae are treated with LCOs. Since both instant invention and Smith teach the same active step of applying LCOs to the plants, it is inherent that both inventions will yield the same result, i.e. the flowering and fruiting of non-legume plants.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Telephonic Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTON N. PRYOR whose telephone number is (571)272-0621. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alton N. Pryor/  
Primary Examiner, Art Unit 1616